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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/954,808	09/18/2001	Franz Steinbacher	13321US01	8211

7590

02/08/2005

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EXAMINER
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JUNG, WILLIAM C

ART UNIT	PAPER NUMBER
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3737

DATE MAILED: 02/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/954,808

Applicant(s)

STEINBACHER ET AL.

Examiner

William Jung

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 15 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-8, 10-19 and 21-23 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8, 10-19, and 21-23 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claims 1-8, 10-19, and 21-23 have been considered but are moot in view of the new ground(s) of rejection.

### *Claim Rejections - 35 USC § 103*

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claim 1-6, 8, 10-17, 19, and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Robinson et al* (US 6,315,723) in view of *Chiao et al* (US 5,980,459).

Robinson et al substantially disclose all claimed invention in claims 1-8, 10-19, and 21-23.

**Claims 1, 16, and 17:** Robinson et al discloses of an ultrasound imaging method where the first  $T_{S1}$  and second  $T_{S2}$  ultrasound beams are transmitted along a common scanline into a region of interest (ROI) and receiving reflected echoes ( $R_{L1}$  and  $R_{L2}$ ,  $R_{S3}$  and  $R_{S4}$ ) and multiplying (via multipliers 42, 44, and 46) the first and second echoes with weighting factor. The weighting process includes contribution from the number of scanlines used to form the composite image. The weighted echoes of signals are combined or added to form a composite image (col. 5, line 56- col. 6, line 46; col. 9, lines 31-61).

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**Claims 13:** In addition to method above, Robinson et al further discloses of composite scanline formed from ultrasound transmission at different focal depths (col. 1, lines 38-43; col. 4, line 59 – col. 5, line 10).

**Claim 14:** Furthermore, Robinson et al discloses of dynamic aperture setting for the transmission parameter to vary the number of transmit elements for each ultrasound transmission (col. 1, lines 20-35).

**Claims 2-6, 8, 10-12, 15, 19, and 21-23:** Robinson et al discloses of utilizing different parameters of transmission and corresponding reception condition such as focal depth, transmission frequency, aperture size (number of transmitting elements), number of scanlines, time delay, and length of the transmit pulse (col. 1, lines 20-43; col. 3, lines 29-52).

However, Robinson et al do not explicitly disclose or imply that the summation or combination of multiple signals involves weighting factor to form weighted echoes. The weighted echo combination is well known in the art as evident by Chiao et al's teaching where the summation or combination of ultrasound echo or signal from the multiple transmission is combined by weighting factor for the entire scanline to form a composite scanline in an ultrasound image (col. 3, lines 18-29). Therefore, it would have been obvious to one having an ordinary skill in the art at the time the invention was made to apply Chiao et al's specific weighted echo combination to Robinson et al's composite scanline to achieve the claimed invention.

4. Claims 7 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over *Robinson et al* and *Chiao et al* as applied to claims 1 and 17 above, and further in view of *Hossack et al* (US 5,873,830).

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Robinson et al and Chiao et al substantially disclose of all claimed invention in claims 7 and 18. Hossack et al further teaches that the compounded or composite images formed from multiple transmission/receptions method uses varying transmission and reception parameter including frequencies, focal depths as well as bandwidth. Therefore, it would have been obvious to one having an ordinary skill in the art at the time the invention was made to apply the teachings of Robinson et al and Chiao et al to the teachings of Hossack et al to achieve the claimed invention.

### *Conclusion*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to William Jung, Ph.D. whose telephone number is 571-272-4739. The examiner can normally be reached on Mon-Fri 8:30 AM to 5 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Brian Casler can be reached on 571-272-4956. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

WJ

February 1, 2005

  
**BRIAN L. CASLER**  
**SUPERVISORY PATENT EXAMINER**  
**TECHNOLOGY CENTER 3700**